LDLWIYHTQGYFPDWQNYTPGPGVRYPLTFGWCYKLVPVEPDKVEEANKGENTSLLH PVSLHGMDDPEREVLEWRFDSRLAFHHVARELHPEYFKNC;

(b) reagents for detecting the hybrids; and

(c) a biological reference sample lacking nucleic acid recognized by said nucleic acid probe composition.

G1 Concl

46. (NEW) The kit according to claim 45, wherein said probe is labeled with a label selected from the group consisting of a radioactive label, an enzymatic label, and a fluorescent label. --

REMARKS

Reconsideration of this application is respectfully requested.

Claims 11-18 have been canceled. Claims 35-46 are new and are derived from canceled claims 11-18. New claims 35-46 are fully supported by the specification, for example at page 1, lines 7-13; page 12, line 29, through page 15, line 14; page 16, lines 10-13; page 17, lines 3-11; and Figures 2, 3, 8, 9, 11, 12, 23, 25, and 26. No new matter enters by amendment.

As requested by the Examiner, applicants submit herewith a copy of the original claims which were involved in Interference No. 102,822.

Claims 17 and 18 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 13 of copending Application No. 08/308,218 in view of White et al. (U.S. Patent No. 4,677,054). Claims 15 and 16 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 11-22 of copending Application No. 08/202,239 in view of White et al. (U.S. Patent No.

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4,677,054). Since these are provisional rejections, applicants request that the rejections be held in abeyance until allowance of the pending claims.

Claims 11, 13, 15, and 17 were rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Chang et al. (U.S. Patent No. 6,001,977). The Examiner alleges that Chang discloses *in vitro* diagnostic methods for detecting the presence or absence of HIV-1 virus.

Applicants' new claims 35-46 recite methods and kits using probes comprising HIV-1 ORF-1, ORF-4, and ORF-R sequences. The proteins encoded by ORF-1, ORF-4, and ORF-R are now known as the Vpr, Vpu, and Nef proteins of HIV-1.

In the attached Tables 1, 3, and 5, applicants provide a comparison of DNA sequences from ORF-R (Nef), ORF-1 (Vpr), and ORF-4 (Vpu) from LAV with the sequences of these regions from the Chang patent (BH10, BH5, and BH8). The sequences of Chang contain stop codons in the ORF-1 and ORF-R reading frames. In Table 1 and Table 3, applicants have highlighted the in-frame stop codons present in the ORF-R (Nef) and ORF-1 (Vpr) reading frames of the BH10 and BH8 sequences of Chang. As a result of these stop codons, the sequences of Chang do not encode full-length HIV-1 Vpr and Nef proteins as claimed by applicants. Therefore, Chang cannot anticipate the methods and kits of new claims 35-46. Accordingly, applicants respectfully request withdrawal of the rejection.

In the attached Tables 2, 4, and 6, applicants have also provided a comparison of DNA sequences from ORF-R (Nef), ORF-1 (Vpr), and ORF-4 (Vpu) from LAV with the sequences of these regions from ARV in U.S. Patent No. 5,156,949 to Luciw et al. The sequence of Luciw contains a stop codon in the ORF-4 (Vpu) reading frame. In

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Table 6, applicants have highlighted the in-frame stop codon present in the ORF-4 (Vpu) reading frame of the ARV sequence of Luciw. As a result of this stop codon, the sequence of Luciw does not encode full-length HIV-1 Vpu protein as claimed by applicants. Accordingly, Luciw also cannot anticipate the methods and kits of new claims 35-46.

Claims 11-18 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over by Chang et al. (U.S. Patent No. 6,001,977) in view of White et al. (U.S. Patent No. 4,677,054). The Examiner alleges that it would have been *prima facie* obvious to combine the method of White with the method of Chang.

Applicants' new claims 35-46 recite methods and kits using probes comprising HIV-1 ORF-1 (Vpr), ORF-4 (Vpu), and ORF-R (Nef) sequences. The sequences of Chang do not encode full-length HIV-1 Vpr and Nef proteins as claimed by applicants. Chang did not even identify open reading frames encoding these proteins. White does not remedy these deficiencies. Consequently, Chang and White cannot make applicants' claimed invention obvious. Accordingly, applicants respectfully request withdrawal of the rejection.

Furthermore, the sequence of Luciw does not encode full-length HIV-1 Vpu protein as claimed by applicants. Luciw did not even identify an open reading frame encoding this protein. Consequently, Luciw also cannot make applicants' claimed invention obvious.

Applicants respectfully submit that this application is now in condition for allowance. In the event that the Examiner disagrees, he is invited to call the

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undersigned to discuss any outstanding issues remaining in this application in order to expedite prosecution.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.

Dated: September 3, 2002

By: _____

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TABLE 1(Nef/ORF-R)

```
gacagggcttggaaaggattttgctataagatgggtggcaagtggtcaaaaagtagtgtggttggatggcctactgta  LAV
gacagggcttggaaaggattttgctataagatgggtggcaagtggtcaaaaagtagtgtggttggatggcctgctgta  BH10
gacagggcttggaaaggattttgctataagatgggtggcaagtggtcaaaaagtagtgtggttggatggcctgctgta  BH8

agggaaagaatgagacgagctgagccagcagcagatggggtgggagcagcatctcgagacctggaaaaacatggagca  LAV
agggaaagaatgagacgagctgagccagcagcagatggggtgggagcagcatctcgagacctagaaaaacatggagca  BH10
agggaaagaatgagacgagctgagccagcagcagatggggtgggagcagtatctcgagacctagaaaaacatggagca  BH8

atcacaagtagcaatacagcagctaccaatgctgcttgtgcctggctagaagcacaagaggaggaggaggtgggtttt  LAV
atcacaagtagcaacacagcagctaacaatgctgattgtgcctggctagaagcacaagaggaggaggaggtgggtttt  BH10
atcacaagtagcaatacagcagctaccaatgccgattgtgcttggctagaagcacaagaggaggaggaggtgggtttt  BH8

ccagtcacacctcaggtacctttaagaccaatgacttacaaggcagctgtagatcttagccacttttttaaaagaaaag  LAV
ccagtcacacctcaggtacctttaagaccaatgacttacaaggcagctgtagatcttagccacttttttaaaagaaaag  BH10
ccagtcacacctcaggtacctttaagaccaatgacttacaaggcagctgtagatcttagccacttttttaaaagaaaag  BH8

gggggactggaagggctaattcactcccaacgaagacaagatatccttgatctgtggatctaccacacacaaggctac  LAV
gggggactggaagggctaattcactcccaacgaagacaagatatccttgatctgtggatctaccacacacaaggctac  BH10
gggggactggaagggctaattcactcccaacgaagacaagatatccttgatctgtggatccaccacacacaaggctac  BH8

ttccctgattggcagaactacacaccagggccaggggtcagatatccactgacctttggatggtgctacaagctagta  LAV
ttccctgattagcagaactacacaccagggccagggatcagatatccactgacctttggatggtgctacaagctagta  BH10
ttccctgattggcagaactacacaccagggccaggagtcagatatccactgacctttggatggtgctacaagctagta  BH8

ccagttgagccagataaggtagaagaggccaataaaggagagaacaccagcttgttacaccctgtgagcctgcatgga  LAV
ccagttgagccagagaagttagaagaagccaacaaaggagagaacaccagcttgttacaccctgtgagcctgcatgga  BH10
ccagttgagccagagaagtaagaagaagccaataaaggagagaacaccagcttgttacaccctgtgagcctgcatgga  BH8

atggatgaccctgagagagaagtgttagagtggaggtttgacagccgcctagcatttcatcacgtggcccgagagctg  LAV
atggatgacccggagagagaagtgttagagtggaggtttgacagccgcctagcatttcatcacatggcccgagagctg  BH10
atggatgaccctgagagagaagtgttagagtggaggtttgacagccgcctagcatttcatcacatggcccgagagctg  BH8

catccggagtacttcaagaactgctga  LAV
catccggagtacttcaagaactgctga  BH10
catccggagtacttcaagaactgctga  BH8
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TABLE 2 (Nef/ORF-R)

```
gacagggcttggaaaggattttgctataagatgggtggcaagtggtcaaaaagtagtgtggttggatggcctactgta  LAV
gacagggcttggaaaggcttttgctataagatgggtggcaagtggtcaaaacgtagtatgggtggatggtctgctata  ARV

agggaaagaatgagacgagctgagccagcagcaga          tggggtgggagcagcatctcgagacctggaa  LAV
agggaaagaatgagacgagctgagccacgagctgagccagcagcagatggggtgggagcagtatctcgagacctggaa  ARV

aaacatggagcaatcacaagtagcaatacagcagctaccaatgctgcttgtgcctggctagaagcacaagaggaggag  LAV
aaacatggagcaatcacaagtagcaatacagcagctactaatgctgattgtgcctggctagaagcacaagaggaggaa  ARV

gaggtgggttttccagtcacacctcaggtacctttaagaccaatgacttacaaggcagctgtagatcttagccacttt  LAV
gaggtgggttttccagtcagacctcaggtacctttaagaccaatgacttacaaggcagctttagatattagccacttt  ARV

ttaaaagaaaaggggggactggaagggctaattcactcccaacgaagacaagatatccttgatctgtggatctaccac  LAV
ttaaaagaaaaggggggactggaagggctaatttggtcccaaagaagacaagagatccttgatctgtggatctaccac  ARV

acacaaggctacttccctgattggcagaactacacaccagggccaggggtcagatatccactgacctttggatggtgc  LAV
acacaaggctacttccctgattggcagaattacacaccagggccagggatcagatatccactgacctttggatggtgc  ARV

tacaagctagtaccagttgagccagataaggtagaagaggccaataaaggagagaacaccagcttgttacaccctgtg  LAV
ttcaagctagtaccagttgagccagagaaggtagaagaggccaatgaaggagagaacaacagcttgttacaccctatg  ARV

agcctgcatggaatggatgaccctgagagagaagtgttagagtggaggtttgacagccgcctagcatttcatcacgtg  LAV
agcctgcatgggatggaggacgcggagaaagaagtgttagtgtggaggtttgacagcaaactagcatttcatcacatg  ARV

gcccgagagctgcatccggagtacttcaagaactgctga  LAV
gcccgagagctgcatccggagtactacaaagactgctga  ARV
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TABLE 3 (Vpr/ORF-1)

```
atggaacaagccccagaagaccaagggccacagagggagccacacaatgaatggacactagagcttttagaggagctt  LAV
atggaacaagccccagaagaccaagggccacagagggagccacacaatgaatggacactagagcttttagaggagctt  BH10
atggaacaagccccagaagaccaagggccacagaggaagccacacaatgaatggacactagagcttttagaggagctt  BH5

aagaatgaagctgttagacattttcctaggatttggctccatggcttagggcaacatatctatgaaacttatggggat  LAV
aagaatgaagctgttagacattttcctaggatttggctccatggcttagggcaacatatctatgaaacttatggggat  BH10
aagaatgaagctgttagacattttcctaggatttggctccatggcttagggcaacatatctatgaaacttatggggat  BH5

acttgggcaggagtggaagccataataagaattctgcaacaactgctgtttatccattt cagaattgggtgtcgaca  LAV
acttgggcaggagtggaagccataataagaattctgcaacaactgctgtttatccattttcagaattgggtgtcgaca  BH10
acttgggcaggagtggaagccataataagaattctgcaacaactgctgtttatccattttcagaattgggtgtcgaca  BH5

tagcagaataggcgttactcaacagaggagagcaagaaatggagccagtagatcctag  LAV
tagcagaataggcgttactcgacagaggagagcaagaaatggagccagtagatcctag  BH10
tagcagaataggcgttactcaacagaggagagcaagaaatggagccagtagatcctag  BH5
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TABLE 4 (Vpr/ORF-1)

```
atggaacaagccccagaagaccaagggccacagagggagccacacaatgaatggacactagagcttttagaggagctt  LAV
atggaacaagccccagaagaccaagggccacagagggagccatacaatgaatggacactagagcttttagaggagctt  ARV

aagaatgaagctgttagacattttcctaggatttggctccatggcttagggcaacatatctatgaaacttatggggat  LAV
aagagagaagctgttagacattttcctaggccatggctccatagcttaggacaatatatctatgaaacttatggggat  ARV

acttgggcaggagtggaagccataataagaattctgcaacaactgctgtttatccatttcagaattgggtgtcgacat  LAV
acttgggcaggagtggaagccataataagaattctgcaacaactgctgtttattcatttcagaattgggtgtcaacat  ARV

agcagaataggcgttactcaacagaggagagcaagaa   atggagccagtagatcctag  LAV
agcagaataggcattattcaacagaggagagcaagaagaaatggagccagtagatcctaa  ARV
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TABLE 5 (Vpu/ORF-4)

```
gtagtacatgtaatgcaacctatacaaatag   caatagcagcattagtagtagcaataataatagcaatagttgtg  LAV
gtagtacatgtaatgcaacctatacaaatag   caatagtagcattagtagtagcaataataatagcaatagttgtg  BH10
gtagtacatgta acg caacctataccaatagtaacaatagtagccttagcagtagcaataataatagcaatagttgtg  BH8

tggtccatagtaatcatagaatataggaaaatattaagacaaagaaaaatagacaggttaattgatagactaatagaa  LAV
tggtccatagtaatcatagaatataggaaaatattaagacaaagaaaaatagacaggttaattgatagactaatagaa  BH10
tggtccatagtaatcatagaatataggaaaatattaagacaaagaaaaatagacaggttaattgatagactaatagaa  BH8

agagcagaagacagtggcaatgagagtgaaggagaaatatcagcacttgtggagatgggggtggaaatggggcaccat  LAV
agagcagaagacagtggcaatgagagtgaaggagaaatatcagcacttgtggagatgggggtggagatggggcaccat  BH10
agagcagaagacagtggcaatgagagtgaaggagaaatatcagcacttgtggagatgggggtggagatggggcaccat  BH8

gctccttgggatattgatgatctgtag  LAV
gctccttgggatgttgatgatctgtag  BH10
gctccttgggatgttgatgatctgtag  BH8
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